

Newsletter of
the Materials
Physics and
Applications
Division

Division's innovators recognized with Technology Transfer Awards



MPA-MC's Kevin Ott joins Joe Vick, right, and Michael Tripodi, left, both of CleanAIR Systems Inc., at Fuller Lodge. Ott and CleanAIR were recognized at the Technology Transfer Awards reception for making a significant contribution to the Northern New Mexico economy by creating new jobs or products.

More than 35 MPA researchers were among those honored for their innovations made at the Laboratory during the recent Outstanding Innovation Technology Transfer Awards Reception.

Technology Transfer Division and Laboratory Counsel sponsored the Fuller Lodge event which recognized more than 300 researchers. The Laboratory produced a record 142 invention disclosures in fiscal year 2006 and Laboratory researchers received 32 patents overall.

MPA staff were the focus of several of the highlights of the event. MPA-STC's David Reagor and Jose Vasques-Dominguez (formerly MPA-STC) received the Distinguished Patent Award for their Through-the-Earth Radio patent, which is exclusively licensed to Vital Alert Technologies, Inc. Reagor serves as the Laboratory's lead for the research and development effort sponsored by Vital Alert, an emergency wireless communications company

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Pat Reardon leads with *Mission perspective*

By Karen E. Kippen
MPA Material Matters Editor

Pat Reardon has never been a military man, but perhaps he should don a helmet and take up a battle cry as he is enlisted in one the Laboratory's most demanding roles—being a group leader.

Reardon's mission is to lead the Materials Science and Technology Division's Polymers and Coatings Group (MST-7). The success of his staff and the approval of his management are his objectives. "My job is to keep MST-7 alive and well, to keep MST Division alive and well as best I can, and share with MST-6, 8 and 16," he said.

To accomplish this, Reardon relies upon communicating candidly and understanding the challenges of working at Los Alamos from a variety of perspectives.

Reardon, who came to Los Alamos in 1990, is in addition to a group leader, project leader for the



Above, Brian Patterson (foreground) and Pat Reardon examine a one-legged cricket used for training on MST-7's Xradia x-ray micro-computed tomography instrument.

Laboratory's high energy density physics program for target fabrication activities. He was also a technical staff member for several years.

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From John and Paul's desks

MPA and MST: one year later, taking stock, making strides

On the occasion of the one year anniversary of the new MST and MPA Divisions, we thought it appropriate to offer a joint perspective “From the Desk” on our first year. Many good things—technical milestones and discoveries—have happened in the last year, and these are and have been highlighted in a series of all-hands meetings at various organizational levels. Rather than repeat those accomplishments again, we’ve opted to emphasize what you’ve told us about our first year, as articulated in the recent Leadership Development Initiative survey report.

But first, we want to thank and congratulate the LDI Class of 2006: Amit Misra, Jen Martinez, Jason Cooley, Stuart Maloy, Terry Holesinger, Kimberly DeFriend, Marcelo Jaime, Heather Hawkins, Mark McCleskey, and Mike Rivera.

A year ago, a central question was would we be better or worse off as separate divisions. It seems clear that we’ve at least honored the Hippocratic oath of “do no harm;” while this is gratifying, it also means that more work is needed to demonstrate that the whole is greater than the sum of its parts. As we write this, both MST and MPA division



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offices are in the midst of moving to co-locate with the EPS directorate office and P- and LANSCE-DO. We’re confident that this move will lead to more effective directorate-wide coordination and strategy without compromising the amount of time we spend walking our spaces and interacting with you in small groups. The move will also lead to reductions in overhead costs due to cross-organizational efficiencies. This is hopefully a bureaucratic step towards accomplishing our objectives.

From a strategic perspective, three initiatives are worth noting. Last fall we led the “materials” topics of the Grand Challenge Workshops. Many of you submitted input and participated in these workshops. The focus on intellectual atmosphere and research capabilities in the LDI report were in line with the intent of these workshops. More recently, we completed the first Materials Capability Review, which provided an opportunity to highlight synergies not just across our two divisions but more broadly across the Laboratory. We will build on the recommendations that come from this review to further strengthen and better articulate the unique value that materials research has in accomplishing the Laboratory’s mission. We also recently submitted a Signature Facility proposal for a concept known as PRIME

—Predictive Responsive Infrastructure for Materials Exploitation. The mission of PRIME, which integrated concepts from several of the proposals presented at the workshop on March 19, is to deliver transformational materials solutions at the nexus of energy science and national security. If successful, it will also aggressively address the clear need that you articulate to revitalize our mid-scale instrumentation infrastructure.

The LDI survey also recommended a greater emphasis on recognizing technical successes. We embrace this recommendation and invite you to continue the flow of technical highlights through your group office to Karen Kippen. We also will commit to recognize these highlights by including them in the myriad of briefings and updates we give.

The central theme of the LDI survey was the apparent “triumph” of bureaucracy over science. We are very sensitive to this concern. We’re committed to push back both locally—in those areas directly under our control—and globally—where the issue is institutional. On the other hand, we believe that we need to be realistic in our assessment: some bureaucracy (although it could and should be much less than we have today) is to be expected in an organization as large as ours, and a number of the concerns raised (e.g., the re-doing of IWDs) reflect long-standing trends. Based on the LDI survey feedback, we suspect there are opportunities for bureaucracy-reduction in FOD and compliance, procurement, and HR processes. We will assess potential specific actions and look to you for assistance in streamlining processes.

We thank the LDI team for its work in preparing this assessment and we thank those of you who provided thoughtful input. There is a lot of information in this report; we are engaging our Councils in further dissecting the recommendations and deriving appropriate actions. Please stay tuned

— MPA and MST Division Leaders
John Sarrao and Paul Follansbee

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To read past issues of MPA Material Matters see www.lanl.gov/orgs/mpa/materialmatters.shtml



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Meet MSCookies & Tea's new coordinators

Rico E. Del Sesto and Amit Misra are MSCookies & Tea's new coordinators, replacing MST-6's Heather Volz.

The duo has already held several successful standing-room-only events and are always seeking ideas for hot topics.

Del Sesto, a technical staff member in MPA-MC, has been at Los Alamos for three years, including two years as a Director's Funded Postdoctoral Fellow. Prior to Los Alamos he was a National Research Council/National Academy of Sciences Postdoctoral Fellow at the Air Force Research Laboratory and US Air Force Academy in Colorado.

He received his PhD from the University of Utah in organic chemistry and his BA in analytical chemistry from Colby College in Waterville, Maine. His research interests include the synthesis of optical and nanomaterials with applications in threat reduction and ionic liquids with potential applications in a number of areas. He provides part of the synthetic effort for the DNDO/DHS-funded nanocomposite scintillator program at Los Alamos.

He can be reached at ricod@lanl.gov.

Misra, a technical staff member in MPA-CINT, has been at Los Alamos for 10 years. He has a PhD in materials science and engineering from the University of Michigan and a B. Tech. degree in metallurgy from the Institute of Technology at the Banaras Hindu

University, in India.

His research interests include nanomechanical behavior of materials, radiation effects in nanostructured materials, functional nanomaterials, dislocation theory, transmission electron microscopy of atomic scale defects in materials, and physical vapor deposition. He is a principal investigator of a DOE, Office of Basic Energy Sciences-funded core research program on deformation physics of ultra-fine scale materials.

He can be reached at amisra@lanl.gov.

Highlights of upcoming events include Kitty Cha of MPA-CINT and the vice-chairperson of the Students' Association, June 26; open projector and social, July 10; MST-8's Ellen Cerrera on microscopy of shock deformed metals, July 17; Rohit Prasankumar, MPA-CINT in Albuquerque, on ultra-fast laser spectroscopy, July 24; and T-11's Avadh Saxena on materials modeling on July 31.

For the complete calendar see www.mst.lanl.gov/internal/calendar.shtml.



Rico Del Sesto (left) and Amit Misra (right) are the new coordinators of MSCookies & Tea, the long-running series where MST and MPA students, postdoctoral researchers, and staff are invited to meet peers while enjoying tea and cookies. Meetings are held Tuesdays at 4 p.m. in the MSL Meeting Place.

NHMFL's Gordon receives pollution prevention award

NHMFL's Mike Gordon is the recipient of a 2007 Pollution Prevention (P2) Award, given by the Prevention Program of the Environmental Protection Division Risk Reduction Office for work on recycling lead acid batteries.

Gordon's Los Alamos Environmental Stewardship Award was in recognition of his work in securing a contract with a recycling company to recycle 240 lead acid batteries. The magnet lab uses such batteries in support of the generator's protection and control system.

The recycling company shipped the lead acid batteries to another company in California

saving the Laboratory \$8,500 in disposal costs as well as contributing a substantial effort to the Laboratory's waste minimization effort.

This California company recycles scrapped, lead acid batteries and other lead scrap which is the primary raw material, and processed them into pure lead and lead alloys that are then sold to battery manufacturers and lead users in other industries. This company also recycles the plastic used in battery casings which are processed and cleaned for sale to plastic fabricators.

Gordon was recognized for his work at a recent awards ceremony.



Mike Gordon

HeadsUP, MPA!



Piggybacking prohibited

In an effort to defend against lost badges and in response to a security enhancement recommendation by the Worker Safety and Security Team, piggybacking is now prohibited in all Laboratory areas where access is controlled by a badge reader.

The piggybacking prohibition further replaces a number of contradictory, site-specific procedures and practices. By prohibiting piggybacking, the Lab ensures that necessary access control standards are applied consistently.

For more information, see http://int.lanl.gov/security/documents/security-smart/piggy_prohibition6_07.pdf.

Preventing heat stress

When the body is unable to cool itself by sweating, several heat-induced illnesses such as heat stress or heat exhaustion and the more severe heat stroke can occur, and can result in death.

To read more about preventing heat stress, see int.lanl.gov/safety/docs/heat_stress.pdf.

New travel reference card

For quick reference to contacts and reimbursement reminders, CFO is

providing a badge-sized card that can be kept with your LANL badge when on official travel.

CFO has a limited supply of pre-printed, laminated cards in the Customer Service Desk area of the Travel Group Office (Otwi basement). They are also available as a pdf (see <http://cfo.lanl.gov/travel/default.shtml>) that can be printed and laminated.

Mixed office paper recycling

Recycle mixed office paper in the green roll carts at designated Recycle Collection points around the Lab.

The following items may be placed in the green recycling roll carts: white paper; colored paper; magazines; envelopes (with or without plastic window); flyers; newspapers; posters; phonebooks; and Post-it notes.

The following items may NOT be placed in the green recycling roll carts: sensitive documents such as OOU, UCNI, or Classified; transparencies; binders; loose shredded paper; plastics; aluminum; books; toner cartridges; CD Diskettes.

For more information, see http://int.lanl.gov/recycle/mixed_paper.shtml.



"Award" Continued from page 1

specializing in mine and urban safety. The technology uses very low frequency electromagnetic radiation for signal reception and digital audio compression to transmit voice and data signals. Once incorporated into practical devices, the invention will solve major communication problems in mining and urban settings during normal operations and emergencies. MPA-MC's Kevin Ott received the Distinguished Licensing Award for inventing a novel selective catalytic reduction catalyst that can be used to reduce levels of nitrogen oxides (NOx) inherent in exhaust systems in a variety of applications. The NOx HyCat (hybrid catalyst) technology is exclusively licensed by Santa Fe-based CleanAIR Systems Inc. in all fields of use except automotive. The technology was originally developed for use in vehicles under Department of Energy funding and in collaboration with the Low Emissions Technologies Research and Development Partnership, which was formed under the United States Council for Automotive Research.

Ott's research emphasis is primarily directed at providing technical solutions for the nation's energy security problems. His research has resulted in 19 new invention disclosures, from which 13 patent applications have been filed. To date, the Laboratory has received six issued patents from these patent applications. Ott and CleanAir Systems, Inc were also the recipients of Technology Transfer Regional Impact Awards, which recognize individuals, organizations, or programs that have made a significant contribution to the Northern New Mexico economy.

While Ott and his team invented the technology for vehicles, CleanAIR is developing it for use in a variety of applications, including large diesel vehicles, power plants, and lean-burn engines.

For a listing of honorees, see www.lanl.gov/orgs/tt/awards/innov_awards.shtml.

MPA/MST All-Hands scheduled for Thursday

MPA and MST Divisions will hold a joint All-Hands Meeting on Thursday from 3-5 p.m. in the Physics Auditorium. On the one year anniversary of the creation

of the new MPA and MST Divisions, MPA Division Leader John Sarrao and MST Division Leader Paul Follansbee will highlight successes, remaining challenges, and future directions for MPA and MST. Also on the agenda will be a report on the LDI S&T



Productivity Metrics survey, a summary of which can be found at int.lanl.gov/orgs/mpa/files/documents/LDI_summary.pdf

The event will conclude with an LDI

graduation ceremony for the Leadership Development Initiative Class of 2006. Graduates are Amit Misra, Jen Martinez, Jason Cooley, Stuart Maloy, Terry Holesinger, Kimberly DeFriend, Marcelo Jaime, Heather Hawkins, Mark McCleskey, and Mike Rivera.

CINT successfully completes CD4B review

In May, DOE Federal Project Director Will Ortiz presented the Center for Integrated Nanotechnologies (CINT) project being considered for Critical Decision 4b, Approve Start of Full Operations to the DOE Energy Systems Acquisitions Advisory Board (ESAAB).

The ESAAB unanimously recommended approval of CD-4b for the CINT project and the Acquisition Executive, Pat Dehmer, signed the approval document.

This means that CINT construction project at both the Sandia Core Facility and the Los Alamos Gateway has been completed on schedule and within budget.

Both buildings have been operational for more than a year while remaining construction items were completed. At the Los Alamos National Laboratory Gateway these items included the pulsed laser deposition laboratory, an exterior freight elevator, a detention pond and exterior signage for the Gateway.

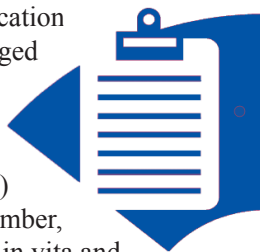
Changes to postdoctoral application process and schedule

The Laboratory's postdoctoral application process and schedule has recently changed. The following outlines key dates and details for postdoctoral packages.

- As much as possible, remove the personally identifiable information (PII) from the application (social security number, date of birth, etc., which is often found in vita and transcripts).

For further information, see <http://int.lanl.gov/science/postdocs/sponsors/package.shtml>. After processing for PII continue to treat the package as PII because of letters of recommendation.

- Do not use or submit the personal demographics page—this is now done at hire time.
- Do not use or submit the reference form, which was previously used with the letters of recommendation.
- Do the citation search (now the sponsor's responsibility if you want your candidate considered for a Postdoctoral Fellow appointment). Include the search engine used and citations for each publication.
- Make needed entries in the Monte Carlo Database (MC2). For documentation see http://int.lanl.gov/science/postdocs/docs/MC2_guidance.pdf.
- Mark the appropriate box for consideration on the cover page (associate, fellow, distinguished). The committee will start using the checked box as the guide for further consideration. For example- if you DO NOT check Director's Postdoctoral Fellow, your candidate WILL NOT be considered for a Director's Postdoctoral Fellowship.
- Upcoming Committee meetings:
 - August 21 meeting:** Regular Director's funded meeting. Deadline for packages to PD office, July 24.



November 13 meeting: Regular Director's funded meeting (previously Distinguished Postdoc Fellow candidates considered in this meeting) Deadline for packages to PD office, October 16.

- Change of dates (very, very likely but not set in stone yet):

January 16, 2008: Distinguished (JRO/RPF/FR) PD meeting

January 23, 2008: Director's funded PD meeting. Deadline for packages to PD office for both meetings, December 18, 2007! (January meetings replace regular February quarterly meeting)

- Make it easy on the committee to like your package! See web link for documentation – this is good stuff: http://int.lanl.gov/science/postdocs/docs/Web_PD_Package_Guide.pdf.
 - Number publications, underline candidate in author list, put citations for each publication.
 - Break out publications per the recommendation list (refereed and non-referred).
 - Ensure the research proposal meets the guidelines in format and scope (Scientific American).
 - Take the time to write a good nominating memo if you want Director's funding.
 - Adhere to formatting rules (12 point Times New Roman, one-inch margins, one page) for research proposal and nominating memo.

For more information on the postdoc application process, contact Committee Members/Division Representatives Andrew Dattelbaum, representative for MPA-11, MPA-CINT, and MPA-MC, amdattel@lanl.gov; John Joyce, representative for MPA-10, MPA-11, MPA-NHMFL, and MPA-STC, jjoyce@lanl.gov; Srinivasan Srivilliputhur, representative for MST-6, MST-7, and MST-8, sgsrini@lanl.gov; or Stephen Willson, representative for MST-16, willson@lanl.gov.

Got news? *MPA Material Matters* features technical highlights developed each week for the Director's Office. If you have news you'd like to see featured, please send it to your group leader to be forwarded to *MPA Material Matters* Editor Karen Kippen.

“Reardon” *Continued from page 1*

Reardon, who is straightforward with group members about everything from financial issues to program development and performance appraisals, said he “treats everyone with the same brutal honesty.” And although he said it’s hard for him to be blunt, “in general I think everyone appreciates knowing where they stand and they appreciate me being as honest as I can be,” even if that means he is “sometimes put between a rock and a hard place.”

Reardon combines this frankness with a personal approach—it can take him a couple hours each morning to do the rounds of the building and visit with staff before getting in front of his desk.

Giving everyone “a clean slate” when he came on board as then acting group leader two years ago is “probably one of the best things Pat did for the group,” said Deputy Group Leader Jon Schoonover. Announcing a group meeting that “he didn’t care what you’d done in the past, what your performance was in the past—this was a clean slate for everybody was refreshing for the group and I think exactly what the group needed... The message was this was a new start and we were going to build things back up.”

The result is a new spirit in the hallways of the Target Fabrication Facility. “There’s a more open attitude, there’s more work going on and people are generally happy in their jobs,” Schoonover said. “From my personal perspective we’ve turned the corner in this past year.”

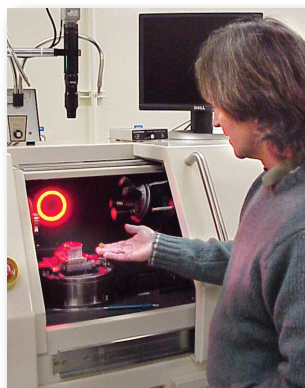
Optimistic outlook

If Reardon has a management philosophy, he said, it is that “if MST-7 takes on the job, the job will get done. And I think everyone in the group pretty much knows that.”

Felix Garcia, a machinist on the Precision Manufacturing and Assembly Team, echoed the sentiment. “We don’t like to turn anybody down,” Garcia said, adding that Reardon, who joined MST-7 in 2003 as their project leader “keeps everyone well informed,” works to set realistic deadlines, and keeps the hassles away from them “when we have a lot of pressure on us while we’re building stuff.”

And even in this time of tight budgets, new policies, and constant change, Reardon considers himself to be an optimist by nature. “You can’t worry about the things you can’t change, and the things you can change you don’t have to worry about, so why worry,” he said.

It was that drive and confidence that made Reardon step forth in 2005 when MST-7 needed a new group leader. “I was



Reardon places the training tool in the x-ray micro-computed tomography instrument's chamber.

At right, a close-up of the one-legged cricket used for training on the instrument.

convinced I could do it,” and over the course of a year, he proved himself by running the group more efficiently and giving its members a sense of ownership and responsibility. He permanently took the helm in March 2006.

In announcing the selection MST Division Leader Paul Follansbee noted that Reardon had “shepherded the group through significant changes in the ICF (Inertial Confinement Fusion) and HED (High Energy Density) programs that have relied upon the resources within the Target Fabrication Facility.”

Maintaining a balance

Reardon joined Los Alamos National Laboratory as a technical staff member in 1990, attracted to its caliber of staff members. Previously Reardon, who grew up in Washington state, had been a technical leader for UNC Analytical Services in Albuquerque, leading a group that developed weapons definition documents. He also created detailed working simulations of weapons plants—the function that eventually landed him a position at Los Alamos.

At his first job at the Laboratory, Reardon developed simulations used by DOE defense programs to study flows of nuclear materials, manufacturing options, waste generation and workload planning. His efforts eventually led him to collaborate with NMT in developing models of TA-55 configurations that support weapon manufacturing. Eventually becoming a deputy group leader in the Technology and Safety Assessment Division, Reardon said it was during those five years that he decided to go back to school to earn his PhD. “I had gotten really, really good at Excel spreadsheets, but forgotten everything else.”

Taking a year off from work for intense advanced studies, Reardon completed his doctorate in chemical engineering at Texas Tech University in 2003. He also has a master’s degree in nuclear engineering from Oregon State University and a bachelor’s degree in engineering and applied science from the California Institute of Technology in Pasadena, California.

The importance of sustaining his scientific credentials has stuck with him, which is why, despite enjoying the challenges of being a group leader, Reardon remains a project leader, continuing to do research, publish articles and read others by members of his scientific community. “It keeps me mentally sharp,” he said. Reardon lives in White Rock with his wife, Bettina, and two children.

